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## **The Abrasol case: an analysis of the managerial problematic affecting a waste-picker organization in Brazil**

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## INTRODUCTION

The following work has been carried out under the structure of a case study. The organization that has been selected is a social enterprise called “Abrazol” operating in one of the favelas of the city of Vitoria in Brazil where the author had the possibility to carry out an internship for two months. Abrazol works within the solid waste management business. The organization collects, sorts and commercializes recycled materials coming from donations or from the collection carried out in the favela where it is located. This specific business impacts on the local community on many different levels - economic, social, ecological and educational - and it is therefore vital for the neighbourhood. Currently the business has featured some management challenges that are undermining its impact in the society it serves. Starting from the hypothesis that the organization is generating and capturing only a small part of the value that it potentially could, the aim of the work is to identify the problematic affecting the business and their origins in order to then propose a new strategy that could allow Abrazol to generate more value for the community and therefore capture more of it.

Abrazol activities are carried out in Planalto Serrano neighbourhood, a low income geographic area situated in the inside of the Serra region of the Espirito Santo (ES)<sup>1</sup> state in Brazil. Planalto Serrano is divided among three different blocks A, B and C and currently Abrazol is the only organization in the neighbourhood that is offering this kind of service to the community even though it has been estimated that it only has a 5% market share of the entire Planalto Serrano. Other organizations of this kind exist in the bigger region of Serra and have proved to be successful but none of them reaches the community of Planalto Serrano, thus creating an interesting opportunity for Abrazol to grow and have impact in its own society.

Abrazol’s business will now be introduced in order to get a first idea about the enterprise. Afterwards, the challenges that the organization need to face and theirs implications will be discussed as well as the arguments of scholars and previews researches provided in the literature. Later on, a deeper analysis of the organization will be carried out in order to understand the causes and consequences of Abrazol’s management challenges. Finally, recommendations will be provided followed by the new strategy plan.

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<sup>1</sup> From now on Espirito Santo will figure in the paper with the abbreviation of “ES”.

# INTRODUCTION TO ABRASOL'S CASE

## Short history and mission of Abrasol

The name “Abrasol” comes from “Associação Banco Regional Ambiental Solidario” which translated from Portuguese means “Regional environmental and solidarity bank Association”. Abrasol was born after a training program organized by the Municipal Secretary of the Environment for all the residents of the community of Planalto Serrano in the region of Serra (ES) in Brazil in order to train them as environmental agents. Thanks to this training, a group of citizens from the community, more or less 13<sup>2</sup>, developed a project called “Projecto Corrego Dr. Robson” with the objective of cleaning, arborizing and creating awareness among citizens regarding the importance of keeping the neighbourhood clean.

Abrasol has as his specific mission the “sustainable socio-economic development” of its community. The meaning that the organization incorporated behind this concept is based on three main pillars: social development, economic development, and environmental awareness. Indeed, as we will see later on, the organization strongly believes that has a major role to play in fighting the social exclusion of the favela and within the favelas itself, in increasing environmental awareness in the sense of creating a more healthy environment for its community and in fostering socio-economic development by creating jobs and possibilities to earn a better life for the community's members.

Starting from 2010, this group of people organized themselves around the entity of Abrasol. During the beginning of its activities Abrasol was an association where volunteers, companies and public sector were offering not detrimental food as base value for exchange with recyclable materials. This was done using a social currency that was already been used in other communities around the city of Vitoria in Brazil. While it was giving value to the importance of collecting garbage from the street and raising awareness among the population on the importance of recycling, this currency was also fostering social inclusion and enhancing the self-esteem of the beneficiaries. However, during the years the business model has been forced to changed and switched from a non-financial model to a more financial one. Indeed, the initial model, entirely based on donations from different partnerships and exchange of goods, started losing its capacity of generating impact once that some of the partners stopped collaborating and denied the donation of food. According to Abrasol's director Sileia Santos “partners' companies did not see the impact they were expecting to have in term of reputation or local development and lost interest in providing help with no visible results”<sup>3</sup>. Here it

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<sup>2</sup> The turnover was high, some people left within the first months of the project while others entered later on.

<sup>3</sup> Extract from an interview conducted with the director of Abrasol Sileia Santos

seems that even though Abrasol was generating value for its different stakeholders by decreasing waste in the community and enhancing the socio-economic development of the neighbourhood, the organization failed in proving to its partners the impact it was generating in the short time they have been operating and therefore lost their support.

As a consequence, the volume of materials brought by the community decreased considerably since the inhabitants couldn't see anymore the advantage of the exchange. Thus, Abrasol found it harder to assure strong partnership both from private and public sector and has started to rely way more on the market than before. Nowadays Abrasol's business model looks like a hybrid model where the market forces are used in order to have a social impact on the society but still needing the support of external partnership to be financially stable.

The community that Abrasol is trying to impact is characterized by 15.495 inhabitants, according to the census of 2010, distributed in within three different blocks A, B and C. Abrasol currently only manages to impact a very small percentage of this population as it will be shown later on, thanks to its local selective collection and the job positions that it offers to unskilled workers.

The methodological strategy that guides Abrasol's actions is the concept of solidarity economy, which implies self-management, solidarity among members, organizing actions, political education, training, monitoring and evaluation of the process to generate work and income. The turnover within the association is usually high and in the last year 2015 it employed an averages of 17 workers.

### **Problem that Abrasol aims to solve**

Abrasol's business represents the response of residents to the low socio-economic development of the community, which can be seen as the result of a series of deeper local problems (see Figure 1).

In order to understand the current problems that Abrasol is trying to tackle, it is important to understand the history and evolution of the Espirito Santo state and its different municipalities, in particular the one of Serra, where Abrasol is located.

The economy of Espirito Santo was initially characterized by the prevalence of the coffee industry, that around the first half of XX century started expanding and becoming the leading industry of the region. At that time, the population was mainly located in rural areas and the urbanization process was just starting to take place. Around 1950 a negative shock impacted the coffee market; the price dropped and the industry suffered a crisis of over production driven by an excessive demand in the international market.

Consequently, in few years the coffee industry slowly disappeared from the region and new industries started to grow such as the iron one, the steel industry, the mining industry and the



commerce around the three harbours of the city of Vitoria. During the 60's the industrialization process started to accelerate in the region of the Big Vitoria followed by a strong urbanization in the 70's. Always more people were attracted by the flourishing industry around the city. This was a period of prosperity and growth that characterized the entire nation and is still remembered as "the Brazilian economic miracle" that boosted consumptions and growth. It is in this specific time that the municipality of Serra, until now at the margins of the positive economic turmoil, saw a huge increase in population passing from 17 to 85 mil inhabitants in only 10 years. Behind the strong and fast urbanization of this area there was an initiative of the state called "Companhia Habitacional do Espirito Santo" that created numbers of housing facilities that benefited specifically this municipality and therefore attracted migrants. However, this economic dynamism promoted by the industrialization did not develop alongside the social dimension, creating often situations of social exclusion. As a result, a place that had a strong opportunity for socio economic development ended up as an unregulated occupation of spaces, urban and environmental degradation caused by massive rural to urban migration.

Finally, the population that, in search for work, arrived attracted by the big industrial projects had hard time finding a job due to the fact that they were not qualified for working in the industries and many of them ended up working in the informal sector. Indeed, a huge number of immigrants that arrived to Vitoria hoping for a better future did not manage to find the job they were hoping for and could not afford the rents of the big city. This easily explains the population and urbanization growth in peripheries such as the one that the municipality of Serra observed, which grew in its urbanization area from 13,4 % in 1970 to 31% in 2013 experimenting the biggest growth among the five regions that are included in the Big Vitoria's territory.

The role of the government in this type of situations is crucial. The state did not manage to control and organize this fast transformation with the creation of an apposite urban planning and lacked to provide basic public service for too much time. Indeed, it seems important to highlight that the lack of planning was not a problem limited to the ES state but it characterized the entire Brazilian nation. (Lira, Pereira de Oliveira Jr., & Laranja Monteiro, 2014). The main cities of the country grew without an urban plan and thus, big problems emerged such as disorganized occupation of land, difficulties in the mobility around the urban area, violence etc. Was only in 1937, when a new federal constitution was created, that municipalities were allowed to be grouped to tackle public problems and take actions. However, a specific law for the metropolitan region of Vitoria was instituted only in 1995 that regulated the organization, planning and execution of public function in the different municipalities (including Serra). Even with this new structure the positive results were really poor. There were difficulties at the operational level and a lack of commitment of the actors

that were too afraid to undertake such a big political commitment for results that they could not really observe in the short-term.

Therefore, the demographic growth, the industrialization and urbanization and the lack of public service contributed to the lack of socio-economic development in areas such as the municipality of Serra.

Finally, an important factor that cannot be forgotten is the geographic isolation of Serra and Planalto Serrano in particular, which is a neighbourhood located in the north interior of the Serra region, far from the coast and the city of Vitoria (as it can be see from figure 2 and 3).

Moreover, Planalto Serrano is located at the extreme periphery of the territory of Serra, enhancing even more its marginalization from the big city. Indeed, it takes around one hour by bus from Planalto Serrano to the center of Vitoria; this implies an economic exclusion of the community from the services of the city and a very low urban mobility. According to Zanotelli et al. (Zanotelli & Galvao, 2010) Planalto Serrano is in the area where the social class called “dominated” lives, which is the most vulnerable one. Inside Planalto Serrano then, the population is distributed into three main blocks A, B and C.

Currently Abrasol manages to only impact a small part of the population of Planalto Serrano with its daily operations, in particularly only a small part of people living in the block A. Indeed, with their selective collection the organization has been estimated to collect materials only from 119 buildings in the main street of block A in Planalto Serrano, among which less then half of them actually provide the business with materials to recycle. The people impacted therefore have been estimated to correspond to less then 5% of the entire population of the community. Those are the people that understand the importance of recycling and are willing to cooperate for the development of their own society.

All the problems mentioned above contributed to: creating community isolation, the lack of infrastructures in the neighbourhoods and the consequent low educational level, health care facilities and waste management services. As a result, the lack of socio-economic development appears clear. The low socio-economic development brought a series of consequences in the community such as the lack of participation in the neighbourhood’s social life, low income and unemployment with high percentage of people relying on the informal sector and an increase in the production of garbage that has worsened the unhealthy environment. These effects are currently impacting the every day life of Planalto Serrano community and motivated that group of 17 people to find a way to face those issues and improve their life conditions.

## **Scope of Abrasol's problem**

The proof of the huge scope of this problematic is given by the diversity of names that are attributed to waste-pickers' organizations tackling local socio-economic development through waste collection around the globe. In English speaking areas they are usually known as "waste-pickers", "scavengers" or "rag-pickers", in Mexico they are called "papeñadores", in Colombia "basureros" and in Brazil "catadores". In particular, the problem has been seriously affecting developing countries such as Africa, South-East Asia and Latin America.

When analyzing waste management systems around the world, a distinction must be done between developing and developed countries. The former are usually characterized by abundance of low-cost labor force and scarcity of capital while the latter present often abundance of capital and technology and high cost of labor. As consequence, developing countries need labor intensive and low cost solutions to alleviate poverty by creating income opportunity for unskilled workers. The problems affecting Abrasol are a characteristic of many low and middle-income countries around the world where the informal sector is predominant. Indeed, developed countries such as Europe have a very limited informal sector involved in the recycling business. The easier access to capital, technology and the fact that population generally pays for the disposal of garbage, create the economic incentives to recycle for the public sector. On the contrary, the financial constraints that characterize lower income country don't stimulate the public sector to recycle and give to waste-pickers the opportunity to earn a life.

Furthermore, slums are usually a characteristic of urban environment in developing countries. These popular neighbourhoods have narrow streets, hills and unorganized agglomerates of housing as result of years of migrations. During decades, people that could not afford to buy or rent a house, preferred to occupy a vacant land and live at the margins of the cities without paying taxes.

Generally, it is a municipality's duty to provide waste management services to citizens. However, since people in slums usually do not pay taxes and streets are not easy to access, governments do not provide the service. If, on top of that, we consider that waste management service is usually expensive for the municipality, it seems clear how the public sector finds it easier and justified to not provide the service at all.

When dealing with garbage, municipalities have three alternatives: landfilling, incineration and recycling. The first one is the cheapest and the easiest for the government but if done in open dumps it can have considerable consequences for environment and public health. Incineration is rarely an option in developing countries because the plants are very expensive and also because it does not make much sense since here the majority of waste produced is of organic nature. Therefore,

recycling is generally the most environmentally, consciousness, cost effective methods for waste disposal.

Each specific country and region found its own way to face those problems according to the specific environment where it is located and therefore present different business models. In India for instance, waste picking is a quite common job among the people belonging to the lowest societal caste. The country as well as Brazil suffers lack of public sector involvement in waste management systems and also presents some good legislation but it's ineffective in the implementation. Historically India has witnessed the same fast industrialization and change in consumer habits that increased the production of waste in the country and have found some solutions in public-private partnerships. For instance, In Pune (India) the business model works with the community paying a little fee for having their garbage collected which implies the collaboration from the community, which is not always the case in other countries. Similar situations are also present in Colombia, Mexico, Philippines, India, South Africa, Kenya, Egypt and other developing countries but also in Eastern Europe. Usually all business plans imply some solid partnerships with either the public sectors, NGOs or private companies as showed by WIEGO reports, Medina researches and the first global strategic workshop of waste-pickers in Pune (India).

## **Stakeholders**

In its everyday life operations Abrasol impacts and is impacted by different stakeholders. It is therefore important to understand how the business can affect those different agents. The main stakeholders for Abrasol are: its employees, the community of Planalto Serrano, the public authorities (municipality and politicians) and the private players including here both suppliers of materials, buyers (the industries and middlemen) and other private companies connected to Abrasol through partnerships. See table in Appendix for more comprehensive analysis (see Table 1).

The stakeholders that Abrasol impact the most are certainly the waste-pickers working there and the community of Planalto Serrano for the dimensions of the socio-economic impact that the business has on their lives.

The positive impact of waste-pickers organization inside their own communities has been proved in many occasions all around different developing countries. There have been successful waste-pickers' organizations in Colombia, Mexico, Philippines, India, Indonesia and Brazil. In Brazil the most referred names are Asmare (BH), Coopamare (SP), Londrina (PR), and in Porto Alegre where waste-picker managed to reach even three times the minimum wage.

However, we can also say that in potential, the stakeholders that mostly impact Abrasol's business are the public sector and the buyers. Right now the public sector and the municipality in particular have been a liability in the business model of Abrasol due to the instability of the help they provide but many examples have shown how with the proper support of governments and municipality waste-pickers organization can succeed. This is also confirmed by a recent study carried out from WIEGO organization which surveyed 760 waste-pickers from Brazil, South Africa, Colombia, India and Kenya who highlighted how they are mainly concerned by value chain dynamics and Government policies even though some countries felt one or the other as more important.

### **Value proposition**

Abrasol's value proposition is based on economic, social, environmental and educational benefits for its stakeholders.

The recycling business has significant **economic benefits** for different agents. Industries can have an economic advantage purchasing recycled materials at lower prices than new virgin ones. Moreover, it generates economic benefits for the community and employees based on more jobs, incomes and more dynamism in the economy of the district. In particular, Abrasol tries to buy everything it needs for its daily operations (such as food or office materials) from businesses inside their community in order to boost the local economy.

The work of Abrasol's waste-pickers is of considerable **social importance**. They are responsible for the transformation of waste into material of interest for major industries, featuring collectors as real environmental agents who do an essential work in the urban cleaning scenario. On the other hand, these workers occupy a marginal position in society, with few opportunities in the labor market, given their needs in terms of vocational training. Therefore, the improvement of this work and its elevation can help improve waste-picker's social situation. In addition, the development of a social business where everyone in the neighbourhood can help will strengthen the sense of community that is vital for the socio-economic development and social inclusion of waste-pickers.

We cannot forget that the recycling activity is not only characterized by economic and social but also **environmental benefits**. In this sense, companies and industries now more than ever know that they have to do something for the environment and improve their environmental image. This is the reason why there are companies that make material donations to waste-pickers' associations.

Selective collection will improve the environmental conditions of the community, making it a more healthy and pleasant environment. In addition, there are many dimensions that will benefit from this business as less consumption of wood resources; avoidance of damages to the hydrological cycle and biodiversity; impact on occupational health; decrease in risk of damage to human health from air emissions and also lower energy consumptions.

Finally Abrasol has an important role in **educating** the community of Planalto Serrano in dividing and collecting waste and raise awareness about the environmental importance of recycling for their lives and the lives of future generations.

So Abrasol business's solution makes it possible to have a more efficient economic market for both industries and waste-pickers while enhancing socio-environmental condition of workers and their communities and at the same time educating households to the importance of ecological issues.

Now that the overview of Abrasol has been given, we can focus on the problematic concerning this specific work: the managerial issues affecting the organization ability to capture value.

## **THE MANAGERIAL PROBLEM OF ABRASOL**

As mentioned in the introduction, Abrasol's presents a series of managerial challenges that are interfering with its objective to impact the local community. Indeed, the forced change in the business model, which resulted more as an automatic shift driven by external forces than a specific strategic decision, and the team lacking knowledge and skills to properly manage a business, ended up creating a confused organization with no clear strategy. On top of this confuse business model, Abrasol also presents a problem related to its cash flow. Indeed, Abrasol suffers of financial instability due to the high dependency on not reliable partnership stipulated with the local municipality. The organization needs to face the fact that the financial support is not provided with stability during the all year, which consequently impacts Abrasol's costs structure. For instance, during months with less financial support Abrasol decrease it expenses related to mainly food and work equipment such as boots or glasses for the workers, undermining the safety and health of its waste-pickers. Secondly, the volatility of donations of material it receives doesn't allow Abrasol to control its production and stabilize the stream. In the last year for instance the lowest production level has been reached in June with 869, 6 kg while the highest in December reaching 21033,79 kg.

As consequence, the organization manages to have a positive P&L at the end of the year only thanks to the costs saving put in place from the management. They have nevertheless a business model that is not sustainable by itself and no monthly structure that allows them to pay properly their workers and sustain all the costs they would like to sustain in each month.

Finally, the management's team lacks of skills and experience to manage the business and the people. They do not take account properly of the quantity and quality of materials arriving and departing from the warehouse and their data often contain calculation errors. Moreover, they do not seem to have acknowledged the low productivity results of the organization and the lack of motivation of their workers if compared with other local similar organizations, as it will be shown in the benchmark analysis.

Those are the most visible issues concerning the mismanagement of the organization, and the clearest result of that is the poor salary that they can afford to pay to waste-pickers. It has been estimated that in a credible scenario where Abrasol received half of money from its partnerships during the year, there would be months when each waste-picker will earn about 42 R\$ while other months it can reach 662,93 R\$. The average per month is equal to 326,37 R\$ an amount that is less than the average minimum salary per month in Brazil.

Furthermore, this problem is undermining the achievement of their mission, the sustainable socio-economic development of Planalto Serrano neighbourhood. Indeed, it is well known that low pay

affect the motivation of workers, creates conflicts, impacts turnover and undermines the core values of associations working under the values of solidarity economic. This therefore has consequences on the social impact of the organization. Abrasol is not generating and therefore capturing all the value that it could.

In order to understand the causes of these problems a literature review will first analyze what scholars believe are the main problematic of those kind of organizations and then we will go deeper in the analysis of Abrasol.



## **LITERATURE REVIEW**

Before entering in the literature review some specifications need to be done. Indeed, when analyzing waste-pickers organizations usually some limitations occur regarding the fact that within the informal sector, not many quantitative data have been collected in order to assess the dimension of the problem. The author observed that the literature about waste-pickers organizations usually seems to focus on the fragile social dimension where those people live in and on qualitative researches. However, for the specific purpose of this work the author decided to focus on the specifics aspects that literature refers the most when discussing about the challenges that waste-pickers need to face in the development of their organizations. The Wiego organization for instance (Women in Informal Employment: Globalizing and Organizing), which is one of the many institutions that try to support the development of the informal sectors around the globe, has many times highlighted how waste-pickers organizations usually need to face many challenges in developing their business and scaling it up (WIEGO, 2016).

### **Why do organizations of waste-pickers struggle?**

Different studies have tried to assess the main problems that undermine waste-pickers organizations. While it is definitely true that each organization has its own specific problems depending on their own local environment, studies have found that there are some common issues affecting different organizations in different developing countries. A report related to the first world workshop of waste-pickers held in Pune (India) in 2012, where waste-pickers participated from more than 22 countries, highlighted how waste-pickers problems are usually connected to macroeconomics forces, value chain dynamics, government policies, social security and inclusion, organizational issues and weather conditions (Global Alliance of waste-pickers, 2012). In particular, the majority of the workshop's participants mentioned government policies and value chain dynamics as the main drivers of instability in their job (see Graph 1). These findings have also been confirmed by a recent study conducted by WIEGO in 5 major cities: Belo Horizonte (Brazil), Pune (India), Bogota (Colombia), Durban (South Africa) and Nakuru (Kenya) (WIEGO, 2016).

### **Relationship with the public sector**

When discussing waste-pickers' relationship with the public sector it is important to identify multiple variables. First of all, the lack of support that the government gives to the organization of

waste-pickers through poor laws or policies excludes them or makes it harder for them to access materials. Indeed, government policies can be a real threat for waste-pickers. Taking the example of Bogota in Colombia, in 1994 a city law privatized the waste management service impacting terribly the conditions of local waste-pickers.

Secondly, corruption and harassment often impact the relationship and make it difficult for waste-pickers to trust the authorities. Indeed, taking the example of what has been discussed in Pune's workshop (India), corruption seems a characteristic of the Brazilian's political environment according to the country's waste-pickers, while harassment from city officials was mentioned as a reality in the city of Durban and Nakuru in the African continent.

The last main issue is related to access to funding. Most of waste-pickers organizations do not have a business model sustainable by itself without the help of external partnerships. Therefore they rely on financial partnerships with the government, the local municipality, or NGOs. Those partnerships are usually stipulated on a short-term basis not supporting the organization in a sustainable long term way. This situation is particularly evident when partnerships are signed with governments that change the political party after few years and therefore change the public policies in the municipality. A clear example of the latter is what happened in Diadema (Brazil). Here indeed, the local municipality was strongly involved in supporting the informal sector in waste management systems. However, the turmoil of party politics and coalitions in Brazil resulted in chronic instability, particularly during election period when enforcement of government legislations rapidly changed. In the specific case of a Diadema organization, this political turmoil resulted in a entire year of freezing of remuneration payments which lead many waste-pickers to abandon the organization and go back to work individually on the streets (Yates & Gutberlet, 2011). As it can be understood from the example of Diadema, the strong dependency of those organizations to external funding and the instability of the political environment make it really hard for them to have a stable management of the organizations.

### **Value chain dynamics**

The problem related to value chain dynamics derives from the oligopsonic structure of the recycling market that exploits waste-pickers (Medina M. , 2010). Indeed, the recycling business is an oligopsony, which means that there are only few buyers and too many sellers. As a consequence, unorganized waste pickers cannot put together the necessary quantity of recycled materials to sell directly to the industries. Not having those economies of scales, they are obliged to sell materials to

middlemen who pay them very little for the materials. In such a market structure, waste-pickers form the basis of an economic pyramid that grows in terms of financial gain and decrease in terms of number of financial beneficiaries. Their work is particularly easy to be exploited due to the relative isolations of many dumps, which makes it nearly impossible for scavengers to transport materials to the nearest town. Moreover, the recycling industry is concentrated in a few regions and some cities; therefore the great majority of waste pickers do not have direct access to recycling companies but depend on intermediaries. Furthermore, it has to be considered that often the government gives concessions to specific private companies for the recovery of recyclables, and so it often happens that middlemen and scavengers collude, resulting in very low prices paid to the waste pickers. Finally, industries that need recycled raw materials encourage the creation of middlemen guaranteeing to provide them with the volume of material they need and the right quality (Sasaki & Araki, 2013).

### **Lack of management skills – organizational issues**

Waste management is an area where no waste-pickers or either government have a real knowledge. For this reason, municipalities often prefer to outsource the design of the logistic, using consulting firms that however happen to not really know the reality of the specific communities. On the other side waste-pickers usually have never managed any kind of business and lack basic organizational knowledge. As consequence, they usually rely on NGOs and Universities' incubator programs to be advised especially regarding self-management practices and organizational issues due to their low administratively capacity. Literature has shown how being supported from outsider entities can benefit organizations of waste-pickers but it has also demonstrated how sometimes this can weaken them. Indeed, external support often focus on providing solution for actions that require higher abilities and knowledge such as accounting or logistic but do not teach or train the members of the organizations how to do them in order to be independent once the support stops being provided (Zanin & Francisconi Gutierrez, 2011).

### **Social exclusion and security**

Waste pickers need the support of their own community. Capacity building within the society is an important aspect for the success of a social business model such as the one of association and cooperatives of waste pickers. The first step in this direction is to avoid the bad reputation that waste-pickers seem to have, but most importantly is to include the community in the business

processes as key stakeholders. Indeed, once the community understands the importance of waste pickers for their everyday life, they will be more open to help with donation of materials. At the end, waste pickers want to help their own communities and therefore need their support in collecting or sorting the waste already inside the households. A clear example of the support that the community can provide the waste-picker is what happens in Pune where each household pays a very small fee to have their waste collected, helping the waste-picker business model to be sustainable.

### **Macroeconomics shocks**

Waste pickers' income is very unstable due to the price fluctuation of materials according to inflation and economic shocks. Most of waste-pickers' organizations pay the wages to the workers with the revenues from the selling of the materials; therefore any changes in price affect directly the income of those people. Taking the example of what happened in the downturn of 2008-2009 global crises, it has been estimated that it affected the income of those people by about 62%. For instance, price of plastic dropped from R\$ 1,00 to R\$ 0,60 per kg while paper from R\$ 0,47 to R\$0,12. This makes them very vulnerable to any oscillation of prices. On top of that, the market structure only aggravates the situation and the low prices offered to those organizations. Prices can be affected by an increase in the inflation rate, like it happened in India between 2007-2013, by political economic decision, such as the Free Trade Agreement between US and Colombia in 2011 that made the price of commodities in Colombia drop, or by changes in the exchange rates of countries. Moreover, according to 2016 WIEGO report, macroeconomic shocks impacted also the demand of recyclable materials from industries that, by producing less in downturn periods, need less materials. Finally the economic turmoil can affect the rise of competition among waste-pickers (Global Alliance of waste-pickers, 2012).

Literature is inclined to agree on the fact that the best way to tackle the majority of those problems would be an integrated waste management system that includes the informal sector inside the formal policy framework. Integrated waste management tries to systematically manage waste in environmentally, economically and socially sustainable ways. The integrated waste management approach however, should be adapted to the local conditions when implemented in developing countries. This system comprises: waste prevention, re-use, recycling, composting, incineration and sanitary landfilling. The importance of this approach is proved also by new researches that are trying to optimize the creation of a reverse logistic network for waste management systems that takes into consideration legal, environmental, economic and social criteria such as the one proposed by Ferri et

al. (2015). However, this approach implies the collaboration of all the different stakeholders involved in the business, which is not always the case that happens in reality.

This literature overview creates a starting framework in order to analyze Abrasol's situation. Nevertheless, a deeper analysis of Abrasol internal and external environment must be conducted before being able to comprehensively understanding its situation.

Now that it has been discussed what literature reports problematic affecting the management of waste-pickers' organization, the focus will be switched on the specific problems affecting Abrasol.

## **ANALYSIS OF ABRASOL'S PROBLEMATICS**

We will first analyze the environment where Abrasol operates in order to identify the external forces that influence the business and then we will focus on the organization itself and its internal characteristics and processes.

### **Macro environment analysis**

This is an analysis of the external factor that can affect Abrasol's business. It considers political, economic, social, environmental, legal and demographic factors.

#### **Political factors**

**Political incentive to recycling:** In the city of Vitoria the municipality carries out workshops on environmental education and collects recyclable materials to later on bring them to waste-pickers associations. In the municipality of Serra the situation is partially different. The municipality here outsourced some of the services to private companies. The company ERG URB Ltd. has been contracted to clean the streets of Serra's municipality and collecting the garbage directly from households without any form of separation of waste. The contract is going to last still for about 18 years. As consequence, Serra's region doesn't provide any selective collection of waste; it simply brings waste to sanitary landfills. The long term prospective of the contract makes it impossible for

the municipality to contract the waste-pickers for collecting and separating the garbage due to the high cost already paid to the private company. However, what the municipality can do is to pay waste-pickers only for sorting of materials and consequent recycle. In this case the only problem could be related to the low disposable budget owned by the municipality to provide the payment to waste-pickers organizations.

Moreover, inhabitants perceive the need of a better waste management solution, which is increasing political awareness about the issue. As a matter of fact, a research carried out by a consulting firm in order to assess the situation of the waste management system in Serra highlighted how the inhabitants believe that the service is not done in a proper way and there is an imbalance between the service provided in wealthier neighbourhoods and in poor ones. Interesting is also to notice how Planalto Serrano is believed to be one of the dirtiest neighbourhoods of the municipality. This highlights how the municipality does not seem concerned about the way the service is provided. However, the recent plan that Serra's municipality carried out with the consulting firm put as objective an increase in selective collection of garbage and the integration of waste pickers cooperatives in the municipality waste management system, which seems to mean a rising interest of the political sector in the conditions of local waste-pickers.

**Political Instability:** The political environment is a big source of uncertainty for waste pickers organizations as mentioned before. In particular, the change in governments can imply change in support toward the organizations. In the case of Abrasol, the organization is trying to cooperate with the current political party to negotiate a contract that will allow waste pickers to be directly paid by the municipality for the service they provide to the society. The fear is that with future change of the political scene, the achievement of a possible contract will be jeopardized.

At a national level Brazil is going through an unstable political turmoil after the recent development of the impeachment of President Dilma Rousseff, and this political instability is likely to aggravate the economic situation of the country.

### **Economic factors**

**GDP decreased:** The country has witnessed an important drop in its GDP level. This has impacted unemployment rate, which has been growing since 2013 and is expected to rise till 10% this year. . The decrease in GDP is luckily to impact the demand of recycled materials from the industry and to imply a consequent decrease in materials' prices.

**Inflation rose:** the inflation is rising, impacting on people lives and waste-pickers costs. According to an article of the Wall Street Journal, Brazilian's inflation is currently reaching its higher peak in the last 13 years (around 10%) being driven by the increase in food costs, energy and transportation. It will strongly impact the purchasing power of waste-pickers and their organizational costs.

**Oil price is low:** the global decrease in oil price is threatening the advantage of recycled materials against virgin material and therefore reducing the industry demand for recycled.

**Increase in unemployment rate:** The increasing unemployment rate is likely to impact on the competition of organizations such as Abrasol. They compete with the huge amount of autonomous waste-pickers that work in the streets. The research from Visao Ambiental highlighted how many people believe that there are some autonomous waste pickers collecting waste in their own neighbourhood in Serra. Moreover, the economic crisis is known for increasing the number of people that decide to go for the informal sector and has therefore aggravated the level of competition.

### **Social factors**

**Strong social Movement:** In the main time, organizations of waste-pickers have begun to organize themselves in order to gain bargaining power in the recycle market and enhancing their political influence. One of the most relevant facts is the creation of the Brazilian National Movement of Waste-Pickers ("Movimento Nacional de Catadores de Materiais Recicláveis) born in 1999. In 2011 the movement was representing 300 of the 500 cooperatives and association of "catadores" created in the last 10 years and has been a powerful tool to manifest the needs of this social class in the mediation with political forces. Furthermore, the movement is working to foster the creation of a network of waste-pickers around the nation, such as the one present in Espirito Santo called "Reunes". Reunes works with the aim of strengthening waste-pickers organizations, mainly providing shared knowledge among organizations and connecting organizations to improve their commercialization power. Abrasol has been recently included in Reunes network.

**Low community acceptance:** The Planalto Serrano community does not seem to be very open about including waste-pickers. They stopped providing materials when they could not exchange them anymore with food and at the moment are not providing Abrasol with the support they need. Recently, there has also been a theft in the Abrasol office, highlighting how probably the community does not perceive the importance of what Abrasol is doing for them. Moreover, according to the report of Serra municipality, one of the first interventions to be done in the waste-management system improvement is educating the population on the importance of recycling and separating

materials at source. Finally, the poor collaboration was also proved by the fact that during the door-to-door collection of materials in the neighbourhood only about 30% of the houses they passed provided them with materials.

Thus, the lack of support from the community of Planalto Serrano is hiding an opportunity for the organization in collecting more material in the neighbourhood.

**The influence of the solidarity economy principles:** it must be highlighted that in Brazil there is a strong connection between waste-pickers organization and a socio-economic movement called “Solidarity Economy”. Indeed, the principles of solidarity economics are present among the principles of the National Brazilian movement of waste-pickers. This is not only a characteristic of Brazil but it can be found in many waste-pickers organization working in other Latin America countries.

This movement presents itself as an alternative to capitalism. While the latter focuses on the idea that an organization’s objective is the accumulation of wealth, solidarity economy puts as main focus the human being. This alternative way of seeing economy not only privileges the collective property but also contributes to enhance social justice while considering environment and long-term sustainability of the business and its impact on future generations.

In this concept of economy, four characteristics have been identified: cooperation, self-management, economic viability and solidarity.

The first characteristic, “cooperation”, highlights how all members have the same objectives and interests while putting together their efforts in order to achieve common goals. Everybody is the owner of the organization’s goods and is therefore responsible during bad times. “Self-management” instead refers to the concept of participatory management in the way they organize their work, in the decision of the organization’s strategy and its everyday operations. The concept of “economic viability” reflects the idea that everybody puts together their efforts, knowledge and resources to foster collective work and business results. Finally, the principle of “solidarity” is related to fostering the right distribution of results to enhance life conditions of the members, of the environment, the community, workers and consumers.

In this framework one of the most interesting element is the concept of self-management. Indeed, if we consider that the majority of these organizations were born from the initiative of local people that usually do not have the knowledge to manage a business and suddenly find themselves having to organize different people with different ideas and poor management experiences, it results clear how this can create some problems. Moreover, it seems that solidarity economy often lacks effective self-management and efficient ways of producing wealth. This is proved by the fact that most



cooperatives survive in very precarious conditions, having management troubles, difficulties in commercializing products and accessing funds and technologies.

Furthermore, another important aspect of solidarity economy is the creation of cooperative networks in order to share knowledge. Indeed, networks offer cooperatives a triple advantage. They are an effective way of sharing management knowledge and ways to improve efficiency. They contribute to increase economies of scale and gain bargaining power with intermediaries. Finally, they also contribute to give political power and voice to the waste-pickers movements.

### **Environmental factors**

The new **trends** related to environment and climate change awareness, as well as the creation of sustainable development goals, allowed waste-pickers to be known for their role and it created the right environment for the development of appropriate laws and frameworks in the field of solid waste management.

**Weather** conditions affect waste-pickers' work. Abrasol facility and infrastructure is not adequate to deal efficiently with weather changes. In winter for instance strong rain can slow down the productivity of waste pickers and decrease the quality of materials that are not stored inside the building for lack of space.

### **Legal factors**

Brazilian legal structure present many interesting legislation that can help waste-pickers' category. Here are some of them:

- In 2002 the waste picker job was introduced in Brazilian code of occupations, recognizing their work.
- Law 11.107 / 05 – It gives priority access to federal funds for proposals that include waste-pickers.
- Decree 5,940 / 06, which determines the implementation of selective collection in public organs and its destination to waste-pickers organizations.
- Law 11,445 / 07 - Establishes national guidelines for basic sanitation and allows local governments to hire the scavengers to carry out selective collection in the area. Thus, cooperatives start being seen as business and not just a as social activity.
- Law 12.305 / 10 - Solid Waste and Decree 7404/10 - Solid Waste –it gives priority to waste-pickers for selective collection; and foster the reverse logistic in recycling industry.

- Reimbursable and non-reimbursable sources of financing (Fundação Banco do Brazil, Petrobras, BNDES Social Fund).
- Increase in the number of projects directed to waste-picker organizations from different public and private agents (Ministries, FUNASA, SENAES, Petrobras).
- Recognition of the waste- pickers profession and project for granting retirement by INSS.

### **Demographic factors**

It is interesting to look at Serra's demographic numbers to realize the waste production trends of the Planalto Serrano neighbourhood, where Abrasol works. The monthly average generation of household and municipal solid waste in the city of Serra is 10 tons, considering a population of approximately 409,000 inhabitants; the city has a daily per capita generation of approximately 0.80 kg per capita per day (below the national average of 1.1 kilograms).

Most of the waste generated in the municipality consists of organic material (64%) followed by paper, cardboard (12%) and plastic (12%). Also 94% of general solid waste is recyclable and only 6% are non-recyclable waste, which demonstrates the high potential for recycling of municipal solid waste. However this creates costs that could be avoided if the waste is separated at source and directed to a specific treatment.

It is also interesting to look at the numbers and characteristics for the residents of the Planalto Serrano neighbourhood. According to the census in 2010, this district has a population of 15.495 inhabitants. Moreover, considering that each inhabitant produce 0.80 kg of waste every day, at the end the neighbourhood only can create 12.396 kg of garbage per capita per day and 371.880 kg every month and about 30% of these are waste which may be recovered once excluded organic waste and discards (about 111.564 kg per month only in the Planalto Serrano neighbourhood).

We can now have a clearer overview of the impact of different macro factors on Abrasol's business (see Table 2).

What seems to negatively impact more strongly Abrasol's situation is the economic and social factors while legal and demographic forces will be in favor of the business.

## **Industry analysis**

In accordance with the evolution of most developing countries, Brazil has well witnessed significant changes that affected this industry. Here, the combined effects of population growth and urbanization, industrialization and increase of consumption and the difficult implementation of national environmental policies at municipality level, contributed to the growth of the recycling Industry.

The nation, only from 1960 to 2010, experienced an urban growth of 402%, reaching a rate of 84% of urbanization. Between 2010 and 2011 the generation of solid waste in Brazil increased of 1.8%, a rate increase that was greater than the rate of urban population increase. In this scenario, about 60% of Brazilian municipalities still dispose their waste in inadequate places generally due to the high cost of a well-organized waste management system. In 2008, only 13% of solid waste in Brazil was being collected for recycling purpose. On top of that, researches state that globally, solid waste management costs will increase from today's annual \$205,4 billion to about \$375,5 billions in 2025, cost increase will be more serious in low income and lower-middle income countries.

This issue is even more important if we consider that the recycling of about 90% of materials arriving to industries in Brazil is achieved by exploitation of the labor of hundreds of thousands collectors of recyclable materials than in the absence of a public waste management policy, provide the service within the informal sector.

The recycling sector in Brazil moves around R \$ 12 billion per year. So, according to the study of Applied Economic Research Institute (IPEA) commissioned by the Ministry of Environment, the country loses around US \$ 8 billion annually for failing to recycle waste that is sent to landfills or dumps. Only 13% goes to be recycled and the materials more recycled are aluminum and paper, the first one being very lucrative. It is clear that there is potential to grow and try to reach higher recycling rates.

The southeast region of Brazil, where Abrasol is located, is the one that presents the highest rates of collected garbage and of selective collection. Aluminum cans are those more recycled almost 100% while more can be done for paper and plastic.

In order to have a clearer understanding of the industry forces, a Porter five forces analysis has been carried out comparing the general forces in the Brazilian recycling industry with those affecting Abrasol in particular in its specific environment.

## **Porter's five forces**

The five forces analysed are: the competition, the power of buyers and suppliers, the threat of substitute services and finally the threat on new entry.

- Competition: Usually competition among waste-pickers organization is medium and depends on the specific local situation and public policies. Indeed, in all the Brazilian country the need of the service as we saw above is high so that waste-pickers organization found themselves more often to cooperate than compete among each others. However, competition may arise between organized waste-pickers and waste-pickers that lonely collect garbage from the houses. Indeed, especially in periods of economic downturns, the number of people that turn to waste-picking activities to earn some money increases and can undermine the collection of organized waste pickers. Competition may also appear between waste-pickers and private companies that can be contracted by the public sector to collect and recycle materials. In the specific case of Abrasol, the organization face no competition in Planalto Serrano neighbourhood which present an amazing opportunity for them to increase their 5% market share in the neighbourhood. Abrasol have a competitor in the bigger region of Serra represented by Recuperlixo, however, the dimensions of the Serra region and the fact that both organizations are part of the Reunes network led the two association to cooperate instead of competing.
- Power of buyers: Buyers in the industry are represented by middlemen and companies that prefer to buy cheaper recycled materials instead of new virgins ones. Those industries drive a generally strong demand. Industries indeed demand huge quantity of materials that most of the time can not be provided directly from waste-pickers associations that do not manage to reach enough economies of scale and are often spread on a too big territory having low mobility to reach industries and not uniform product among them in the way they are packed for instance. As a consequence industries rely on middlemen that collect and conform materials from different waste-pickers organization to then resell it to the industries. In this market dynamics waste-pickers organization end up being exploited by middlemen with very low prices applied to their materials compared to those that the industries pay to middlemen. For this specific reason network of waste-pickers organization have arise in order to coordinate their production and not pass through middlemen in the selling procedure. In

the specific case of Abrasol, they do not reach a production big enough to avoid middlemen and get exploited for that so we can say that buyer power is high.

- Power of suppliers: The access of materials is often a issue for waste-pickers organization and they impact it have on the associations is usually relates to the specific business plan used by the organization. In the specific case of Abrasol the power of suppliers is high due to the fact they do not have diversified partnerships for the donation of materials and most of all comes from the same company and they do not collect enough in the neighbourhood.
- Threat of substitute: The only service that can actually undermine the waste-picker work is when the public sector contract a company to carry out the collection of garbage without recycling it. This service can represent a non-incentive for the population to recycle and can undermine waste-pickers work that now need to create awareness in the population by themselves. This is exactly what happens in the Serra region where the municipality of Serra contracted ENGURB to collect the garbage so no recycling process is carried out.
- Threat of new entry: This is generally high due to the easiness of starting this type of business in terms of regulation and government incentives. However, even though is easy to access is not easy to grow.

## **Abrasol's business model, key activities, resources and infrastructures**

### **Business model**

As mentioned before, in the necessary shift from a non-financial business model to a more financial based one, Abrasol for many years had a not clear business structure. Currently, the organization presents a hybrid business model characterized by both elements of a profit and non-profit organization. Indeed, on one side the organization aims to have social impact and relies still on key partnerships for the development of its core business. The main example here is the partnership with Vitoria Ambiental that currently provides Abrasol with the majority of materials. However, those partnerships are a source of instability for the organization. On the other side therefore Abrasol relies more on the market where it sells the materials recycled even though doesn't reach the production dimension necessary to be sustainable without the help of external partners.

## **Key activities**

Abrasol's daily activities include mainly receiving and partially collecting solid recyclable materials, sorting them according to their characteristics, pressing them to add value and finally storing them in order to later on proceed to their commercialization (see Figure 4).

Materials collected or donated are stored outside the warehouse in big bags waiting to be taken inside and sorted. Once there is enough space on the sorting table, waste-pickers, usually men or younger people, drag the bags inside the warehouse and spill the materials on the table. Here the materials are sorted in relation of their typology. Usually each waste-picker is responsible to sort a specific material. Once the materials are sorted into different categories they get stored again in bags and deposited at the end of the warehouse in order to be pressed. However, the storing space is not enough and materials usually accumulate since they only have one press with a maximum capacity of 80 kg at once. Finally, once the materials are pressed, they are weighted and then stored outside the warehouse in a backyard covered only by a plastic roof to avoid that winter rains diminish the quality of the recycled materials. Here the materials wait until enough is accumulated to fill an entire truck and be collected by the buyers.

All of these processes are done without a proper control. According to Abrasol's waste-pickers, they do not know how much material they produce every month or they sort everyday, which indicates lack of communication between administration and employees working the waste, but also disorganization and poor accuracy in trying to understand the functioning of the business. However, they estimated that it takes around two weeks to store materials for half of a truck.

## **Resources**

Abrasol already owns some of the key resources needed to develop the work. They have enough employees, a van, a sorting table, one press (max 80 kg), one balance, basic equipment for work of collectors etc.

In order to have a better understanding of Abrasol's needs we asked the people working there what they believe Abrasol needed. Both people working in the administration and waste-pickers highlighted the same points. The girls working in the administration of the business stated that they need more waste-pickers and some more resources such as a bigger press that allow them to press 250 kg instead of only 80 kg and also something to transport the materials once pressed such as forklift or a pallet truck. Another problem that was highlighted from the director was the lack of

space to store the materials in a more efficient way and to divide the space between working area and a space to have meeting and eat far from the waste. Waste-pickers working in the warehouse as well stated that the most urgent resource they need is a press since when you use it for paper you cant use it for plastic so it would be better to have two different ones for each material. They also highlighted the need for the forklift. According to both categories of workers this can increase the productivity of the actual workers and made them achieve higher volumes per month.

Furthermore, some of them also highlighted how they do not receive much material and that they could receive more once they have good resources and more motivated workers. Indeed, to increase materials they would need one more press and also a truck since their van is too small to do the all the selective collection of the neighbourhood.

### **Employees**

Abrasol has an average of 17 employees. The turnover in this kind of business is usually high since many people often consider it as a temporary job. This number includes 12 full time waste-pickers plus the director and four girls (one of them is doing both the work in the office and sometimes the work in the warehouse) helping the administration of Abrasol. The administration of Abrasol is remunerated in the same way of the waste-pickers, by the amount of hours they work with the revenues coming from the materials sold. As consequence, their salary depends totally on the amount of material they manage to sell every month.

They are supposed to work 8 hours but according to the registers most of them do not work more than 5-6 hours. Moreover, some of the waste-pickers highlighted as complaints that not all of them work as they are supposed to and do not put enough effort on it. Sometime people did not even show up at work or when they were supposed to. It has been calculated that they earn on average 326,37 R\$ for month, an amount that is less than the average minimum salary per month in Brazil.

### **Infrastructures**

The warehouse has been donated to Abrasol so they do not have to worry about the rent. However the building is still too small to be an efficient place of production. The land they have is about 682,44 m<sup>2</sup> while only 287,80 m<sup>2</sup> is the dimension of the building itself. It includes the kitchen, one bathroom, the administration office, a sorting table and the dining room are in the same space which doesn't makes it very healthy. There is the need of enlarge the part of land edified in order to divide the meeting and dining area from the warehouse and increase the space to store materials.

## **Suppliers and materials**

Abrasol receives materials from private companies, the municipality, and the community while it does the selective collection in its neighbourhood by itself. It therefore receives materials from a total of eight suppliers (see Graph 2).

Vitoria Ambiental. A company specializing in total waste management offering integrated environmental services for the management and treatment of solid waste to industries such as steel, mining, mechanical metal and pharmaceutical / chemical. This company makes donations of solid waste to Abrasol as part of its social and environmental responsibility strategy. Vitoria Ambiental's truck comes when the company has accumulated the required amount of materials to fill in the all truck. The frequency of the deliveries can't be controlled by Abrasol and represents the majority of the materials Abrasol receive (about 40%). Moreover, its interesting to point out that Vitoria Ambiental is the leading supplier of aluminum and most metals, which are the materials sold at the higher price.

Community. This material is collected by the residents of the Planalto Serrano's community and donated to Abrasol. This is the main source of paper to Abrasol and its second largest material suppliers (about 28%).

Selective collection. The selective collection of Abrasol is carried out in Planalto Serrano neighborhood and is still not very developed. Indeed, Abrasol is able to collect only the materials once a week from the main street of Block A (still nothing from B and C). However, this represents around 22.75% of the material received by Abrasol and also has a good amount of metals.

The collection is carried out every Tuesday, and it takes all morning only to collect waste from one street. The reason behind the low productivity of this process seems related to the poor collaboration of the community and Abrasol's disorganization. Indeed, waste-pickers need to either knock people's doors or shout to get people's attentions; only very few people are already waiting with the materials outside the house or have deposited the materials in front of the doors. Many buildings have nobody inside due to the fact that it is working day and working time. It has been estimated that waste-pickers pass about 119 building – either households or shops – but only 36% of them actually have collected materials to donate (see Table 3). Shops seem to be more aware about the importance of recycling than the households and they also provide Abrasol with more items and more metals than houses.

According to Abrasol's members there are different reasons behind the underdevelopment of their selective collection: the low number of people in the street aware about the importance of dividing



the waste, the low capacity of Abrasol's, the few collectors that can stop working in the warehouse to do the door to door collection, the low physical productivity of Abrasol that makes it harder to increase production. In addition, till now the organization has never really made any analysis about the number and typology of households/shops that donate materials in the selective collection so it has very little information about the reason as to why people are not aware or do not want to cooperate with the organization.

Schools. Serra's municipality also collects materials from Serra's schools (mainly paper) and this donation only account for 5.25% of the materials.

SESE collection, Varco International, Project Joan do Bairro and Tabuazeiro collection. These donations cover the remaining 4% of materials received at the warehouse.

Abrasol receives each months mainly paper (44%) and plastic (36%) but also an interesting amount of metals (12%), including iron and aluminum which have the highest selling price, and finally other materials (8%) such as batteries, oil or glass that only arrive sporadically (see Graph 3).

An interesting point that should be highlighted is how the materials vary between months. Indeed, as specified before, Abrasol cannot control when the donations arrive and this makes it very volatile. As a consequence, there are months when they receive and produce way more than other months. In particular, paper seems to be the most volatile type of material as we can see in the following graph (see Graph 4).

For instance, in May-June Abrasol received a huge donation of metals from one of its partnerships and since metals are sold at higher prices they focus on the production of this particular material leaving in stand by paper and plastic.

## **Waste discards**

Waste discards are specific solid waste that have no possibility of reuse and can only be sent to landfill or incineration. When the materials donated or collected comes with many waste discards, they undermine waste-pickers' work because it slows down their sorting process and decreases the quality of recyclable materials.

When the materials have a smaller amount of discards, it speeds up the work. The only way to avoid discards is to divide the material before this arrives in Abrasol. Most of the discards come from Vitoria Ambiental and the selective collection. Regarding materials coming from Vitoria Ambiental there is less that can be done. However, Abrasol could reduce the waste discards of its selective collection by increasing awareness about the importance of dividing solid and humid waste directly

inside households and explaining what can and can not be recycled. In this way, waste-pickers will gain time and reduce their sorting work and at the same time will increase the quality of the recycled waste. The municipality truck that comes here three times a week takes then the discards.

### **Buyers and materials sold**

The recycling market is not a very efficient one as we have already discussed before.

The average prices depend on the local market situation and are very different between the different materials. As seen before, they can also be influenced by economic factors. Paper, which is the main material collected, is what is sold at a lower price. The materials have a better price are aluminum and other metals, as we see in the following chart. Also plastic is quite remunerative (see Graph 5).

In the specific case of Abrasol, plastic is the material that affects revenues the most, due to the fact that its one of the materials collected the most from the organization and with a quite good average selling price. Paper is the second one only due to the large amount collected every month since its average price is the lowest. Interesting is to notice how metals, which represent only 12% of Abrasol's average monthly collection, account for 17% in its average monthly earnings. This is due to their comparative higher selling price and demand from the industry (see graph 6).

Finally, this graph shows again how the volatility in materials collected and worked every month is also reflexed in volatility of revenues. In particular, plastic and metals' volatility in the amount arriving each month seems to be the responsible for the high volatility of revenues (see Graph 7).

### **Productivity**

In order to assess Abrasol's productivity, an analysis of their materials stream and production has been carried out. A precise attention has been paid to physic and economic efficiency as the two drivers of higher productivity for waste-pickers organizations.

#### **Physic efficiency**

Physic efficiency is a form of productivity measure useful to assess the general productivity of the way an organization works. It is a ratio of kg of material produced each month on the number of waste-pickers. It tells us how many kg per month each waste-pickers is able to produce. In the case of Abrasol, the organization produce an average of 11834,39 kg per month and has an average number of waste-picker per month equal to 17. Therefore, its physic efficiency is equal to 696,14 kg.

## **Economic efficiency**

This measure is necessary to assess the market situation and the bargaining power of the organization. Indeed it is a ratio between the revenues from the selling of materials and the number of waste-pickers. The monthly earnings equal to 6347,45 R\$ divided for the 17 workers reach an economic efficiency equal to 373,38 R\$ per month.

In order to influence those results, Abrasol should pay attention to key resources to increase its productivity as well as a better use of their infrastructure. By enhancing these two elements the organization will probably increase its physic efficiency and be able to increase the amount of material received in order to increase earnings. Moreover, in order to enhance physic efficiency more attention should also be focused on the lack of motivation that some waste-picker have highlighted as one of the drivers of slower productivity.

## **Benchmark**

The purpose of the benchmark analysis is to study successful business models and practices used by waste-pickers organizations in order to identify any interesting implications for Abrasol. Since literature seems to agree on the idea that each organization is highly dependable to its specific environment we will focus on the Espirito Santo state benchmark, which will consider the situation of successful waste-picker organizations in the same environment where Abrasol is located. What seems to be more relevant for the discussed organization it's the productivity and the ways to improve it, which is the reason why the benchmark will be mostly focused on this aspect. However, before going deep into the productivity benchmark, an overview of the most cited business model for waste-pickers organizations will be provided in order to have a broader vision of the possible business model that could fit Abrasol's case.

### **Business models overview**

Many are the business models used by waste-pickers organizations around the globe. In order to have a satisfying overview of the models, the author identified some variables that seem to influence the choice of business model adopted by waste-pickers organization and gave the example of organizations currently working with those structures (see table 5). The variables identified are: the way the organization access waste, the strategic partnerships of the organizations and the sources of revenues. Regarding the way organization access the waste, three different options has been

identified. In the first model the organizations receive materials directly from the local municipality (such is the case for Ascamare and Amariv in ES region in Brazil) (Micaela, 2013), which usually implies that the municipality is the main strategic partnership they have. In the second model, they collect directly from the streets (which seems to be the most used model present in India, Brazil, South Africa, Kenya and Colombia for instance) or finally they receive materials as donations from private companies (which is the case for Abrasol or also in Colombia). Sometimes, these different ways of accessing waste are done together. However, it is rare that an organization uses only donations as a source of material, as it happens for Abrasol.

Regarding strategic partnerships, they are usually made with NGO's, private sector, municipality or within waste-pickers organizations. The last two options are the ones usually present in the most successful waste-pickers organizations (such as KKPKP in India and ARB in Colombia) (Chikarmane, 2014), (Táutiva & Olaya, 2013). Regarding the source of revenues, all organizations have earnings from materials sold, the most successful can count usually on extra revenues coming from contracts stipulated with the local municipalities for the service provided in the area (such as in Diadema Brazil or Colombia), (Yates & Gutberlet, 2011) (Táutiva & Olaya, 2013), while some others find other source of revenues by adding value to materials manufacturing products such as tables or toys (as is the case of Durban, South Africa) (Mkhize, Dube, & Skinner, 2013).

It seems that without the support of the municipality waste-pickers follow a growing path toward success made by four steps. Firstly, unorganized waste-pickers became organized by forming associations or cooperatives. Secondly, they create networks among each other that allow them to raise their voices in the public arena. Thirdly, they gain recognition by the local municipality and lastly they get contracted for the service provided.

We can conclude then, since Abrasol currently lacks the support of the local municipality to access the waste, they should focus on accessing waste inside their local community and strengthen the network of waste-pickers in ES (Reunes), which could allow them to have a better bargaining power with both municipality and sellers and in the future bring them to be contracted for the service provided within Planalto Serrano.

### Productivity benchmark

This benchmark was considered necessary in order to have a tool to better interpret Abrasol's productivity results. In order to be able to do so, we will try to frame Abrasol's numbers and those of other three organizations working in ES inside the findings of a very interesting study carried out by the waste-picker Brazilian movement in 2006. The former study analyzed the productivity of 20 different Brazilian cooperatives/associations of waste-pickers; some reaching important levels of

productivity while others did not. The study distinguishes the organizations in three groups according to their level of physic and economic productivity. The first interesting finding of the study is that physic and economic productivity do not necessary go together. There are indeed cases where an organization achieves high levels of physical productivity and low level of economic productivity. The reason behind this is that physic productivity is generally driven by level of infrastructures and resources that the organization owns. Economic productivity instead is generally related to the bargaining power that the organization has inside their local recycling market and is therefore dependent on many external factors. The second important finding is connected to the main drivers of physic efficiency. Indeed those appeared to be the infrastructures, resources and training/ organizational help provided by the organizations. The paper then divides the three groups in four different situations according to the level of investment done in infrastructure and resources to understand the different levels of productivity related to those investments.

Thus, a comparison between Abrasol's productivity results and those of other three organizations of the Espirito Santo's region (Amariv, Ascamare and Recuperlixo) has been carried out. Those three organizations have been chosen for an easier comparability. Indeed, all of them belong to the same region and therefore depend on similar external forces.

Before making the comparison, a table has been created for Abrasol, Amariv, Ascamare and Recuperlixo in order to have a clear understanding of their common points and differences according to some variables. The variables considered are: production level, productivity results, infrastructures, resources etc. and have been chosen according to what the above-cited study found relevant to understand the organizations productivity levels (see Table 4).

Amariv and Ascamare have been selected because they present the best results among the waste-picker organization of the Metropolitan Region of Vitória (ES). The reason behind those results seem to be factors such as the volume collected, the quality of sorted material, the low rate of waste discards and the best prices in commercializing materials.

Amariv and Ascamare work inside the metropolitan area of Vitoria and therefore have a partnership with the city municipality to sort all the solid waste collected by the municipality in its selective collection. This implies that they usually have a more regular production, and that they do not need to send waste-pickers in the door-to-door collection but can get focus only in the work inside the warehouse, without needing trucks. However, organizations working in Serra such as Recuperlixo and Abrasol need to face the fact that the municipality has contracted a private company to collect the garbage from households and therefore will not be receiving the big amount of materials that Vitoria's organizations receive, which means they need to carry out their selective collection by

themselves. It is clear how legislation and public sector play a major role in waste-pickers organization lives.

All of the four organizations (Amariv, Ascamare, Recuperlixo and Abrasol) have the same buyers so the selling prices are almost the same and their economic productivity is also similar according to the amount of waste they manage to accumulate for the commercialization.

Amariv and Ascamare are very similar for many aspects. They both have the same type of partnership with the municipality who brings them materials collected in the city, and pays for energy costs, food and training mainly. They have almost the same type of resources such as press, table, balance etc. However, there are some key differences.

Amariv (2007) is younger than Ascamare (1991). The former has 28 waste pickers while the latter 20. Ascamare has been very productive in the recent years reaching level of production higher than Amariv but unfortunately in 2013 it suffered a fire that destroyed a huge part of their infrastructure and resources. Right now Amariv infrastructures are bigger and they produce more materials monthly. Nevertheless, Ascamare has almost the double of physical productivity of Amariv. This is an interesting point if we notice that Amariv has bigger infrastructures and almost same resources. The reason that can be behind this difference is the different motivation of waste-pickers. Ascamare waste-pickers describe the place as their home, their family. They have many responsibilities inside the association such as they decide to accept and vote new members (which is not the case in Amariv) and they also have two study rooms where they can study either before or after work. These social initiatives have boosted the engagement of waste-pickers with their work and co-workers and increased their productivity.

Their economic productivity is very similar, which highlights how the two measurements are not related, as Amariv and Ascamare are inserted in the same recycling market and will face the same conditions.

Recuperlixo instead cannot count on the selective collection of Serra municipality due to the fact that it is not carried out at all. In this way, Recuperlixo, and also Abrasol are prevented from a huge amount of materials that they could have used. This implies that the two organizations need a slightly different business model where the access to waste is done by either donations or the local selective collection. At the same time they will need different type of resources such as a truck to do the collection and a stronger support from the population. Recuperlixo produce way more than Abrasol. The main difference between Recuperlixo and Abrasol lies on the resources they have, as Abrasol is lacking some basic instruments such as a forklift or another press to be more productive with the resources already present. Moreover, Recuperlixo is present in the region since 2000 so it

has had time to build a good network of partnership compared to Abrasol, and has a good level of physical productivity, which is almost the same as Amariv.

Now we will try to insert them in the framework of the study carried out in 2006. When comparing Abrasol, Amariv, Ascamare and Recuperlixo it seems that Abrasol can be inserted among the low productivity group while Recuperlixo among the medium high one and Amariv and Ascamare within the high one (see Figure 6).

Another important fact is that it seems that all of these organizations have a quite high economic productivity for their level of general productivity. This can be explained by the characteristics of the recycling market in Espirito Santo. In the case of Abrasol for instance, it receives an interesting amount of metals, way more than normal organization of waste pickers usually get. and also more than the organizations in Vitoria, which can be caused by the fact that they get the majority of materials from a company such as Vitoria Ambiental and less from households which may use more paper than metals.

This can be explained by the specific characteristics of the region where they work, an industrial region where there is abundance of metals waste which are the most interesting for the industries and therefore have higher prices. This can be an advantage for the organization if they manage to also reach high level of physical productivity.

From the analysis carried out and the study on productivity conducted by the waste-pickers movement in 2006 we can now identify the main critical success factors and KPI's to achieve better productivity levels in this kind of organizations. As critical success factors four elements have been identified:

- **Resources.** In order to have a good level of production it is fundamental to have the basic resources to achieve it, such as the table, presses, balance, forklift, van or trucks according to the typology of business model that is used and according to the volume of production.
- **Infrastructures.** It is important to have infrastructure reaching the right dimensions to develop the logistic. Generally, bigger is the warehouse, easier it is to reach economies of scales.
- **Access to waste and key partnerships.** This is strongly related to the business model used. Indeed, in the places in Vitoria where the public sector collects the waste, the waste-pickers organizations can rely on better quality and less volatile production, which helps the organization's productivity. On the contrary, Abrasol and Recuperlixo must collect waste by themselves or through donations. Most of the time donations imply lower quality and higher volatility of materials.

- **Labor force.** Here we include both waste-pickers and the management team. The formers must be motivated as seen in the example of Ascamare where motivated workers boosted physic productivity. The latters should be able to take account of the business numbers and put in place the right incentives for people to perform.

We are now able to define some of the key KPI's for productivity:

- **Physic productivity.** Equal to about 1300 kg
- **Economic productivity.** Equal to about 400 R\$
- **Salaries.** The level of salary should reach the minimum wage in Brazil (880R\$)

Abrasol's results are below the benchmark KPI results. However, Abrasol has stillroom for improvement, as it will be shown later on.

## **Financial analysis**

Before entering into details regarding the financial situation of Abrasol, it must be considered that the organization did not organize itself in order to have an accurate understanding of its financial results. Indeed, the management seems still behind in collecting and tracking all the revenues and costs. Recently they have started collaborating with an accountant that is supposed to check the consistency of their statements. However, the only data that was possible to be collected are the revenues and costs of this past year 2015.

## **Partnerships**

Abrasol has partnerships with different agents providing financial support. The Brazilian government provide some help for the organization trough the donation of 21342 R\$ for the yearly viability of the business while the municipality is committed to pay Abrasol costs by covering them with 50000 R\$. The partnership with the municipality is the most problematic one. Indeed, it is vital for the organization to have its costs covered but the money usually arrives with a relevant delay creating many problems for Abrasol. In that case, the business needs to save money in order to somehow pay the bills and get refunded later. Most of the time the money are taken from the salary of waste-pickers that then work for a very low remuneration. Abrasol has also a partnership with



Aderes, a national agency for the development of SMEs and entrepreneurship, which is contributing to their business by paying some of the main costs such as electricity and water of the organization. In order to find a solution for this critical problem, recently Abrasol has been discussing with the municipality the possibility of a contract for the service provided in the neighbourhoods by Abrasol. This contract can make a substantial change in waste-pickers lives allowing them to have a stable and higher salary and transform their informal work to the formal one. However, this contract is not an easy process to put in place and will imply a huge negotiation that Abrasol is now starting with the help of Reunes.

### **Revenues**

We have already spoken indirectly about revenues when we discussed materials collected and sold. As mentioned before they are basically influenced by the quantity of plastic and metals collected every month and by the stability of the prices. Abrasol gains per month an average of 6.347,45 R\$ per month. The high volatility can be shown by the lowest and highest results of the year 2015 which are respectively equal to 501,69 R\$ in June and 11.819,08 R\$ in December (graph 6). The reason behind those differences is related to the volatility of donation provided to Abrasol that cannot be controlled by the organizations.

### **Costs**

The main cost categories of Abrasol are represented in graph 7. It seems clear from the graph that the organization mainly sustains very basic costs such as food, cleaning maintenance etc. Utilities are not represented since they are paid separately by Aderes and therefore Abrasol does not consider them in its calculation. The costs incurred in the year 2015 do not represent all the costs that Abrasol would have included if possible for them to cover them. For instance, the organizations can not yet pay social security to the workers or allow itself to pay the insurance of the van etc. those are all costs that should be included as soon as the organization will have better revenues. Abrasol does not manage every month to cover all its costs only with the selling of materials recycled and for this reason has built some key partnerships with the government, the municipality and other local institutions.

An analysis of the costs in order to reduce them has been done, however, the organization already reduced all that it could in periods when the money do not arrive so it seems like there is not much of intervention that can be done.

## Scenarios

In order to better understand the economic situation of Abrasol three different scenarios have been calculated to assess how much money is left to pay salaries after the organization has paid all the costs. As we can see from the table 4 the best scenario describes a situation where Abrasol receives the money from all its partnership and manage therefore to pay an average salary of 431 R\$ per month per waste-picker. The second scenario wants to show a more credible situation where only half of the money coming from municipality is actually received providing a salary for waste-picker equal to 378,69 R\$ and finally the worst scenario where no money is collected from the municipality leaving an average salary per month only of 326,37 per waste-picker.

Therefore, with these scenarios its clear that workers do not manage to earn the minimum wage which is currently equal to 880 R\$ per month in Brazil, and therefore this should be one of the economic objectives of the new strategic plan. Moreover, it should also be important to save a small percentage of the money earned each month and use them as a reserve for some risk or possible issues arising during the year such as a delay in the money from a partnership.

## Organizational issues

At the organizational level there are also some observations to be done, especially concerning the people, the managerial style, the legal structure and the performance and rewarding system.

As mentioned before, the **people** in the organization are divided between the administration team and the waste-pickers. While waste-picker are mainly old people (both male and female) with poor educations that rarely reach high school diploma, the girls working in the administration have all completed high school and have continued either with a professional school or are right now enrolled in university. However, they seem to lack management skills not only in identifying best strategies for the organization but also in managing the people.

The **managerial style** is strongly linked with the principle of Solidary economy. As consequence, the director tries to build a dialogue with the workers and highly considers their needs, since this approach to the business implies a total involvement of all the workers in the decision of the organization. However, it has being noticed that the workers are not fully aware about what is going on inside the organization and do not know how much they produce each month, how much the

organization earns etc. This clearly makes it impossible for them to have a clear vision about the business and contribute in a constructive way to the decision of the organizations.

Currently Abrasol's **legal structure** is in the form of an association. Waste-pickers' organizations usually opt either for being an association or for a cooperative as mentioned before. Abrasol's decision to be registered as an association is linked to the fact that it requires a easier and cheaper procedure of registration and secondly to the fact that Abrasol doesn't have the minimum number of 20 member needed to be a cooperative. However, being a cooperative would have some advantages for Abrasol. Cooperatives have as final objective the economic viability of the business. Indeed, Abrasol had to shift from non-financial to financial business model counting way more on the market. In order to make this process more feasible the structure of a cooperative will work better and will facilitate the organization to formalize the job of the workers allowing them to be contracted for the service they provide. Finally, cooperatives require a more complex accounting system than the one needed for associations, which could be possible to be implemented in Abrasol only if the administration was being first trained appositely.

Regarding the **performance and rewarding system** Abrasol is clearly lacking. As mentioned before the organization tracks poorly the performance of the business itself and does not share that information with the workers, therefore they do not have a clear idea about how they should perform. Workers are paid by hours and for this reason have no incentive in producing in a more efficient way. There is also no rewarding system implemented yet and indeed, a new remuneration system should be considered as well as some incentives to increase the productivity of waste-pickers.

## SWOT ANALYSIS

Based on our analysis of the external factors that impact Abrasol and its internal analysis we elaborated the SWOT matrix (see Figure 6). From the table it seems clear that the weaknesses identified are more numerous than the strengths.

The most important strengths identified are the business' learning curve acquired after years of operations and the economic efficiency that it manages to achieve for the poor physical efficiency. However, many are the weaknesses, which have a huge impact on the organization. First of all the lack of infrastructure, resources and workers motivation as well as the poor access to waste that the organization has are likely to impact strongly the physical productivity of the organization. In addition the high volatility of materials, the impossibility of controlling it and the poor management skills only worsen the situation. On the other hand, some key opportunities have been identified.

First of all, the possibility to increase the selective collection in the neighbourhood. Secondly, the advantage of being part of Reunes, a network of waste-pickers of ES which is already working in order to facilitate the economic efficiency of those organization.

Thirdly, the possibility to stipulate a contract for the service provided with the municipality that would alleviate the volatility of earnings and provide waste-pickers with fixed remuneration. Finally the most alarming threats are the low acceptance of the community that might undermine the selective collection in the neighbourhood and the political and economic factors.

We have now all the elements to identify the priority objectives of intervention for Abrasol in order to achieve better production level and more important results for the lives of the stakeholders involved in its operations.

## RECOMMENDATIONS

Currently Abrasol's business model needs to adequate itself to be more market oriented since many partnerships have proved to be not reliable enough. In order to do that the most important shift in Abrasol business should be oriented in scaling up its selective collection. By focusing on this specific strategy the organization will manage to decrease its dependency on external partnerships, and decrease the volatility of the production derived by the unstable donations it receives. By controlling the quantity, type and quality of materials arriving inside the warehouse the organization can increase its production while collaborating with its own community to enhance the socio-economic development of the region.

However, there are many aspects that should be enhanced in order to make it possible to scale up the selective collection and make the business solid enough to reach the productivity KPI's results and have a relevant impact on its stakeholders.

Those aspects are listed in the following recommendations:

- Enhance management skills
- Increase physic productivity
- Educate the community of Planalto Serrano to recycling
- Market the business in order to diversify partnerships
- Facilitate the development of Reunes network to increase the economic productivity
- Increase the quality of the products by adding another step on the production process: the manufacture of recycled product
- Scale up the selective collection

## **THE NEW STRATEGIC PLAN**

In order for Abrasol to capture more value, six steps have been indicated. Each step is important in order to make the next one possible and easier to achieve.

### **STEP 1: Enhance management skills**

First of all, Abrasol need to organize itself internally in order to be able to increase its productivity and decrease its financial dependency on municipality. It is fundamental to provide the organization with the training needed to manage the business.

A solution other waste-pickers' organizations have been using is to partner with university to receive support. Many partnership of this kind have been developed in all the Brazilian country under the surveillance of "Proninc", which is The National Program of Incubators of Popular Cooperatives of Brazil that develops consultancy and training with around 82 associations and cooperatives, most of them being waste-pickers organizations. However, these kinds of partnerships should be implemented on the idea of an exchange of knowledge instead of a one-way provision of a service. Indeed, when other solutions are implemented such as hiring an external expert or having a NGO taking care of the accounting, waste-pickers are not really included in the process and cant learn how to manage it by themselves for when they will need to be independent in the future.

### **STEP 2: Increase Physic productivity**

Once Abrasol learnt how to manage and take account of the business, the next step implies an increase of physic productivity. Indeed, we have already shown how Abrasol lacks motivated workers and infrastructure/resources to operate at its best. Motivation can be enhanced with a series of behaviours put in place by the management in the reward system as well as by finding ways of empowering workers while the infrastructure/resources imply a series of new investments.

The priority investments are related to the acquisition or donation of another press, a forklift and a truck in order to be able to carry out a bigger selective collection and sustain the increase in production.

Regarding the motivation of workers, two approaches should be followed. On one end the remuneration system should be used as an incentive to increase the productivity of the waste-pickers that until now seem to work with poor effort and poor continuity in it. On the other end, they should be empowered more according to the principles of solidarity economics.

## **Remuneration**

The remuneration system adopted by Abrasol doesn't seem to encourage productivity. Instead, the model based on payment according to hours worked creates some conflicts inside the organization. Indeed, this system does not create any incentives for an efficient production and it easily makes people relax and do the minimum effort during the time they need to spend at work in order to get the salary. Being remunerated according to productivity goals seems to be more suitable for the actual situation of Abrasol.

However, there are also some drawbacks when you remunerate workers according to productivity goals. For instance, old waste-pickers will work with a slower rhythm than younger ones and will be paid less for this reason or some workers can be discriminated because doing more tiring activities than others etc. A different compensation may therefore create a salary gap among more productive and less productive workers and creating conflicts.

Therefore, it now appears clear how there are some clear contradictions between efficiency and solidarity in those kinds of organizations as pointed out by Fabiana Goulart de Oliveira (2010). The basic issue of the solidarity economy is its solidarity among members and the idea that the whole group works for sharing the results of their efforts; in this way productivity sometimes loses its importance for a more vital social dimension. However, waste-pickers cooperatives survive and give job thanks to what they produce. The contradiction comes up clear. What organizations should do is to adapt productivity incentives to the specific situation of each organization. In the specific case of Abrasol, it has been identified as a strong lack of commitment to productivity and a too relaxed approach in the work place. For this specific reason a system of incentives should be introduced as goals of materials produced everyday. In order to avoid differences in productivity levels among waste-pickers the goal could be set for a group of workers to work in team and divide later on the results or decide some limit threshold of bags that must be worked every day and then divide the compensation according to the number of hours that each of the workers has worked in order to still allow flexibility for some workers.

## **Empowerment**

The other solution to motivate waste-pickers implies their empowerments within the organization, which is strongly related to the compliance with the principles of Solidarity economics. Solidarity economics, as explained before, implies self-management in the administration of the business and cooperation in the decision of the organization. Currently Abrasol's decisions are taken mainly by the administration team and meetings with waste-pickers happen only if needed. This system should

be changed in order to allow an increase of communication and participation of all workers in the everyday life of the organization.

In this way not only there will be listened more opinions before taking decisions but also people will feel more empowered and engaged with the job. A clear example of the importance of this step can be given by another waste-pickers organization operating in Espirito Santo: Ascamare. The management of Ascamare achieved an amazing result, they managed to empower their waste-pickers and put them in charge of important decisions such as to vote for changing or accepting new members and gave them the opportunity to study before or after work in order to gain an education that otherwise they would have never had. This has created a sense of community within the organization that has clearly benefited the physic productivity of the organization, as shown in the benchmark analysis above. Abrasol doesn't have enough space like Ascamare to create study rooms but can implement some other practices, such as common vote for new members or to involve waste-pickers in the operating decision of the organization once they are informed enough about the business.

### **STEP 3: Educate community of Planalto Serrano to recycling**

Before scaling up the selective collection it is fundamental to have the support of the community itself. It has been noticed how until now the support of the population has been missing and only about more than 50% of the buildings and shops where Abrasol collects waste actually provide materials. In order to increase the quantity and quality of materials collected Abrasol need to first increase the awareness on the importance of recycling. A good example of what should be done, can be seen from a social enterprise active in Chile called TriCiclos, which aims to make recycling, and sustainability contagious. In their business model they dedicate a lot of time in incentivize the population on the importance of recycling. They do so by carrying out workshop in schools, organizing lectures and events and explaining directly to people that are bringing garbage to their recycling points how the material need to be deposited and why. Abrasol should follow their example in order to not only benefit the business but also help the social exclusion of waste-pickers that would be seen as actual workers and not only associated with dirt and waste.



#### **STEP 4: Diversification of partnerships**

Another interesting point for Abrasol should be to find a way to diversify its partnership especially within the private sector, which is where right now it has been less developed. Diversifying donation or economic supports could avoid the problematic arising from a temporary fallacy in the provision of support from another partner. In order to do that is fundamental that Abrasol do good marketing of the organization to convince and attract partnership, which must include an analysis of the impact and social benefits that the organization is providing to its stakeholders.

Those partnerships could provide the organization with the resources it needs to scale up the productivity.

#### **STEP 5: Reunes network**

Once the organization has already achieved all the previous steps, the Reunes project will be definitely easier to be implemented. Even though Abrasol is already a member of this regional waste-picker networks, the project has only started a year ago and will take time before all the organization will be able to reach a common point and produce materials in the right quantity and quality to be able to put them together and sell them at better prices directly to industries. Nevertheless, if Abrasol manages to increase quality and quantity of its production the process will advance faster and the organization will see the economic benefits of it way sooner.

#### **STEP 6: Add value to the production chain**

The last step that Abrasol could implement in order to grow economically would be to add a process to the production line and use the recycled materials to manufacture some products out of it. This idea has already been implemented in many waste-pickers organizations. An example is to create soap out of oil that is recycled.

#### **STEP 7: Selective collection**

Abrasol should focus in enhancing and scaling up the selective collection inside the Planalto Serrano neighbourhood. Indeed, this strategic shift could have many important positive externalities for the organization. First of all, the development of Planalto Serrano community is the reason why the organization was born and it will make sense therefore to work for it. Secondly, by increasing the production coming from this collection, Abrasol will manage to depend less from the private

companies donations and will be able to control when the materials arrive and influence their quality. In this way it will decrease the volatility of the production and will stabilize also the earnings. The population produces a lot of waste that is not collected yet and that therefore is polluting the streets. Moreover, this would imply a tighter relationship of the organization with the population that will have to be educated in how to recycle. This will be an indirect way to create awareness in the community on the benefits of collection and recycle of waste but also will make them understand the job of waste-pickers and will make it easier their integration inside the community. Furthermore, an increase in the amount produced will speed up the integration of Abrasol with the other organizations of waste-pickers operating in ES and being part of Reunes.

In order to be able to scale up the selective collection, some investments need to be done before. Those investment will need to be done in form of donation from partner institution due to the high costs that they imply and are: a truck (price range between R\$ 78.000 and 125.000) and a forklift (price range between R\$2.000 and 15.000)<sup>4</sup> and a new press able to work till 250 kg (around R\$ 8.000 to 10.000). In addition to that, the organization should consider an increase in costs due to expenses such as fuel, maintenance and marketing estimated to increase the yearly costs of about 15%. The marketing should be directed especially toward Planalto Serrano population on how to recycle and cooperate with waste-pickers. Educating the population before starting increasing the selective collection is vital. Indeed, it will make the process of collection faster and at the same time it will improve the percentage of waste discards produce (right now equal of 25% of material collected here). With a good education of the population and the new resources, skilled management and motivated workers the organization should be able to do the collective collection twice a week in all the main streets of the three blocks.

Currently the selective collection is carried out once a week only in the main street of one block of Planalto Serrano taking half a day and contributing to the 23% of the materials collected by Abrasol. Assuming that the other blocks have same waste producing habits of the block A and donate the same percentage of plastic, paper and metals that are donated by block A, it has been estimated that Abrasol will earn per month 8247,33 R\$ more than with the selective collection carried out before. This amount include the 25% of waste discards, which implies an average month salary for workers equal to 767,10 R\$ each. Once that the population has been educated in the way they need to divide the garbage and decrease discards the earnings could reach 10996,44 R\$ achieving a monthly wage per waste-pickers that finally overcome the minimum wage reaching 928,81 R\$ (as it can be seen from table 6).

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<sup>4</sup> Prices derivated from <http://www.mercadolivre.com.br>

It seems clear that by scaling up the selective collection from this point on, with more investments in bigger infrastructures and more waste-pickers Abrasol can thrive and scale up.

## CONCLUSIONS

Starting from the hypothesis that the organization was failing in creating and therefore capturing value that it could, the author objective was to identify the issues undermining the development of the business and propose a new strategy as the solution. Throughout the work the initial hypothesis has been confirmed.

Indeed, from a first analysis of the literature on waste-pickers organizations was already clear that many waste-pickers enterprises present different problems that affect their ability to capture value, mainly related to market dynamics and government policies. Those findings have been also confirmed for the case of Abrasol. However, the organization's analysis has shown also that the problems affecting Abrasol derived from a confused business model and a lack of strategic planning as consequence of a lack in the knowledge and skills of the management team. Those findings can be seen clearly from the Swot analysis results which shows all the issues identified within Abrasol but also some key opportunity that the business should consider in order to capture more value.

By analysis problems and opportunities, a new strategy has been identified that implies a slight change of the current business model. Indeed, the organization should scale up its selective collection within the Planalto Serrano neighbourhood. This solution has been identified as the best one because it allows Abrasol to have the high number of positive externalities. Indeed, by scaling up its selective collection Abrasol achieves to rely less on donations, decrease volatility of production and therefore of the earnings, increase its production in terms of quantity and quality and depend less from the public sector. This new strategy will only be possible with a first round of investments. After doing so, it has been estimated that Abrasol should be able to reach better productivity results, stabilize its production and revenues stream and be able to pay a salary to waste-pickers finally reaching the levels of the national minimum salary, which was one of the KPI references.

Furthermore, the work not only brought interesting results for Abrasol, but it also highlighted some important considerations for waste-pickers organizations in general. Indeed, it seems from the literature that very little is known about the way those organizations are managed. Most of the researches have focus on external forces and qualitative researches around the social category of waste-pickers instead of trying to understand what is going on inside the organizations. Therefore, an interesting point for further researches would be to investigate more the internal managerial dynamics and strategies put in place also in relationship with the managerial style imposed by the solidarity economy ideas.

Finally, for the author this paper was a very interesting work because not only it allows to personally contribute to have impact on a group of people that works hard everyday and does it for the development of its own community by impacting on the triple bottom line concept of economically, socially and environmentally sustainability

## **Limitations**

As with any research work, some limitations need to be specified and can affect the results of the case study. The first limitation to consider regards the quality of the data. Indeed, as being already mentioned several times, Abrasol data is not reported in a satisfying way. They have poor computer skills and still are used to write down everything. This can imply error of transcription as well as of calculation.

Another limitation comes from the data collected in order to create a benchmark analysis. Literature presents many qualitative researches in the field but poor quantitative data available in order to assess productivity level of those organizations. This is mainly related to the fact that waste-pickers organization works in the informal sector where is always harder to quantify data.

Lastly, one of the biggest limitations has been the distance. The author only spent two months working directly within Abrasol and then continued to work on the research from Europe, which made the communication with the organization complicated and not very rapid.

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